

In the Claims

1. (Cancelled)

2. (Previously Presented) A circuit arrangement for supplying an LED array comprising:
input terminals for connection to a voltage supply source;
output terminals for connection to the LED array;
a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:
an inductive element L;
a unidirectional element;
a switching element coupled to the inductive element and the unidirectional element; and
a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:
a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on} , during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out} , wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;
wherein the DC-DC-converter is an up-converter and the circuit comprises a circuit for controlling T_{on} proportional to V_{out}/V_{in}^2 .

3. (Previously Presented) A circuit arrangement for supplying an LED array comprising:
input terminals for connection to a voltage supply source;
output terminals for connection to the LED array;

a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

- an inductive element L;
- a unidirectional element;
- a switching element coupled to the inductive element and the unidirectional element; and

- a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

- a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on} , during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out} , wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;

wherein the DC-DC-converter is a down-converter and the circuit comprises a circuit for controlling T_{on} proportional to $V_{out}/((V_{out}-V_{in})^2)$.

4. (Previously Presented) A circuit arrangement for supplying an LED array comprising:

- input terminals for connection to a voltage supply source;
- output terminals for connection to the LED array;

a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

- an inductive element L;
- a unidirectional element;
- a switching element coupled to the inductive element and the unidirectional element; and

- a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-

converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on} , during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out} , wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;

wherein the DC-DC-converter is a flyback-converter comprising a transformer with a transformation ratio N and the circuit comprises a circuit for controlling T_{on} proportional to $(V_{in} + V_{out}/N)/V_{in}^2$.

5. (Previously Presented) A circuit arrangement for supplying an LED array comprising:

input terminals for connection to a voltage supply source;

output terminals for connection to the LED array;

a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

an inductive element L ;

a unidirectional element;

a switching element coupled to the inductive element and the unidirectional element; and

a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on} , during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out} , wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;

wherein the circuit comprises a current source that generates a current that is proportional to V_{in}^2 .

6. (Original) A circuit arrangement as claimed in claim 5, wherein the current source comprises a first voltage divider coupled to the input terminals, a first zener diode coupled to the first voltage divider and a switching element coupled to the first zener diode.

7. (Original) A circuit arrangement as claimed in claim 6, wherein the current source comprises a second zener diode.

8. (Original) A circuit arrangement as claimed in claim 5, wherein the circuit further comprises:

- a capacitor coupled to the current source; and

- a comparator, comprising:

- a first comparator input terminal coupled to the capacitor,

- a second comparator input terminal coupled to an output terminal of a second voltage divider coupled to the output terminals of the circuit arrangement, and

- a comparator output terminal coupled to the control electrode of the switching element.

9. (Previously Presented) A circuit arrangement as claimed in claim 5, wherein the control circuit is equipped with circuitry for substantially square wave modulating the amplitude of the current through the output terminals.

10. (Previously Presented) A Liquid Crystal Display unit equipped with a backlight formed by a LED array and with a circuit arrangement as claimed in claim 5.